

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-170625

(43)Date of publication of application : 26.06.1998

(51)Int.Cl. G01S 5/02
H04Q 7/38

(21)Application number : 08-331037 (71)Applicant : NIPPON TELEGR & TELEPH
CORP <NTT>

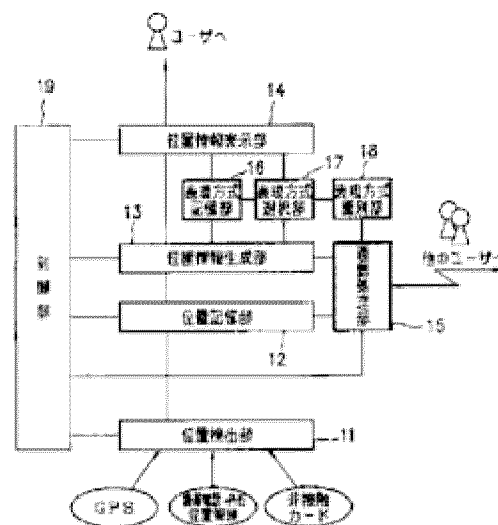
(22)Date of filing : 11.12.1996 (72)Inventor : MAEDA NORIHIKO
OGIWARA MASATOSHI

(54) METHOD AND DEVICE FOR DISPLAYING LOCATION INFORMATION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a displaying method and a device for location information which reduce possibility of information shortage or privacy invasion.

SOLUTION: A representation scheme storage 16 accommodates plural representation schemes of location information which have different displaying accuracy and relations between each representation scheme and a communicating user. When another user requests a communication processor 15 to indicate his/her location, a communicator identifying section 18 identifies the communicating person. A representation scheme selecting section 17 selects representation scheme for location information based on the identification result and data stored in the representation scheme storage 16, and a location information creator 13 creates location information based on the information which is detected by a location detector 11 and stored in a location storage 12. This enables the display to provide location information at accuracy corresponding to each user.



* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1]The position information method of presentation displaying the present position in display accuracy beforehand defined according to a communications partner in the position information method of presentation which always detects a position and displays the present position to an inquiry of a position from a communications partner when there is an inquiry.

[Claim 2]In the position information method of presentation which always detects a position and displays the present position to an inquiry of a position from a communications partner, While carrying out the group division of the communications partner beforehand at two or more groups, when display accuracy of position information is defined for every group and there is an inquiry, The position information method of presentation identifying a group to whom an inquiry partner belongs among said two or more groups, and displaying the present position in display accuracy corresponding to this group.

[Claim 3]A positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner, comprising:

A communication object identification part which identifies a communications partner.

An expression method of two or more position information with which display accuracy differs.

An expression method storing part which memorizes correspondence relation between each expression method and a communications partner.

An expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a discriminated result in a communication object identification part, and a memory content of an expression method storing part.

[Claim 4]In a positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner, A communication

object identification part which identifies classification of a communications partner, and classification of a communications partner and a correspondence relation of two or more groups who set beforehand, An expression method storing part which memorizes an expression method of two or more position information which differs in display accuracy, and each expression method and each group's correspondence relation, A positional information display provided with an expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a discriminated result in a communication object identification part, and a memory content of an expression method storing part.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the position information method of presentation which displays the present position (address) on a communications partner, and its device.

[0002]

[Description of the Prior Art]In recent years, mobile communication technology progresses and society that many users use mobile communications is being realized. Under the present circumstances, if a user's position can be detected and this can be displayed on other users, It is utilizable for the service and application using position information including the information retrieval (when a user is in Shinjuku Station, the restaurant around Shinjuku Station is notified) which can support smooth communication of the users which are present in a remote place and from which a user's position serves as a keyword.

[0003]As concrete detecting position art, the non-contact badge (a feeble radio wave and infrared rays are used) in the enclosure of positioning by GPS (Global Positioning System) carried in the car etc. and the detecting position by the base station information of a cellular phone or PHS, etc. are mentioned.

[0004]In order to utilize for service or application the position information acquired by such detecting position art and to receive the benefit, it is necessary to provide one's position information to users and computer programs other than oneself.

[0005]Drawing 1 shows an example of the conventional positional information display, and, as for a position information generation part and 4, a position detector and 2 are [a communication processing part and 6] control sections a position information indicator and 5 a position-memory part and 3 one among a figure.

[0006]The position detectors 1 are concrete position sensing devices, such as GPS. Positioning/detection of the position of a user with a device are performed, whenever there are

directions from the control section 6, or whenever change arises to detection information, this is sent out to the position-memory part 2, and it is made to memorize.

Other users' position information is acquired by the communication which the communication processing part 5 performs, by directions of the control section 6, from the communication processing part 5, is sent out to the position-memory part 2, and is memorized.

[0007]The position-memory part 2 sends out the memorized detection information to the position information generation part 3 with directions of the control section 6.

[0008]The position information generation part 3 generates the position information with which a user and other programs are provided based on the detection information sent from the position-memory part 2, and sends out the this generated information to the position information indicator 4 according to directions of the control section 6.

[0009]The position information indicator 4 requires generation of position information of the position information generation part 3 via the control section 6 according to a user's demand (updating for every fixed time is included.), and displays the position information which the position information generation part 3 generates and sends out to a user.

[0010]When there is an inquiry about a position from other users or computer programs, the communication processing part 5 asks, a demand is detected, and it notifies to the control section 6. The control section 6 receives the notice from the communication processing part 5, and it takes out directions to the position-memory part 2 so that the information which the position-memory part 2 memorizes may be sent out to the communication processing part 5. The communication processing part 5 sends out the sent position information to other users and programs.

[0011]Although the explanation mentioned above described the case where the user itself owned a position sensing device, About the case where the information which a PHS network manages, the local area network for which a non-contact badge is detected, etc. are used, its position information as well as other users' position information can be acquired by communication which the communication processing part 5 performs.

[0012]As explained above, in exchange of position information with other users, the information which the position-memory part 2 memorizes was conventionally passed to the other party as it was. For this reason, the utilizing method and the method of presentation of information across which the same information will go across to every partner, and it went were also left to the other party. In order to provide all the partners with information by the same expressive form, it was difficult to apply several different expressive form according to a partner. Therefore, the anxiety over a user's "infringement of privacy" will follow on realization of the application using sharing of position information, or position information, and it has become one of the causes by which use does not progress.

[0013]

[Problem(s) to be Solved by the Invention]in the society where mobile communication developed truly -- "-- always - since the situation of a communications partner is not known a priori while" communication is attained anywhere, "troublesome communication which does not understand the time and a place" from the others increases. Since prediction of a partner's situation is to some extent attained by what a partner's position understands a priori, sharing of position information is effective in facilitation of communication.

[0014]In the Prior art, the position information acquired by the detecting position is shown to the others by the unicentric mode of expression. Since the same position information is provided to every partner (other users, computer programs, etc.) (display), As shown in drawing 2, there was a problem that "shortage of required information" arose for some partners, or "infringement of the privacy using excessive information" arose, and there was a problem that sharing of position information was not effectively done among users as a result.

[0015]This originates in the ability not to perform proper use of the alternative position information expression like "giving an intimate partner rough position information for detailed position information at the partner who is not so."

[0016]The purpose of this invention by making applicable the mode of expression of different position information according to the character of the user and group who become a providing object, Preventing "shortage of required information" and "infringement of privacy by an excessive offer of information", users' situation understanding is promoted and it is shown in attaining facilitation of communication.

[0017]Other purposes of this invention are to make easy realization of the informational service using sharing of position information, or position information by reducing a user's anxiety over infringement of privacy.

[0018]

[Means for Solving the Problem]In this invention, in order to solve said SUBJECT, a position is always detected, and when there is an inquiry, in the position information method of presentation which displays the present position to an inquiry of a position from a communications partner, the present position is displayed in display accuracy beforehand defined according to a communications partner.

[0019]Under the present circumstances, while carrying out the group division of the communications partner beforehand at two or more groups, when display accuracy of position information is defined for every group and there is an inquiry. A group to whom an inquiry partner belongs among said two or more groups is identified, and it may be made to display the present position in display accuracy corresponding to this group.

[0020]Thereby, proper use of an expression method of alternative position information like "giving an intimate partner rough position information for detailed position information at a partner who is not so" is attained.

[0021]In a positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner in this invention, A communication object identification part which identifies a communications partner, and an expression method of two or more position information which differs in display accuracy, A positional information display provided with an expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a memory content of an expression method storing part which memorizes correspondence relation between each expression method and a communications partner, and a discriminated result in a communication object identification part and an expression method storing part is proposed.

[0022]If the necessity of providing other users and computer programs with position information occurs according to said composition, a communication object identification part will identify the communications partner. On the other hand, an expression method of position information with which a communication object is actually provided is determined that it is an expression method selecting part based on discernment of a communication object by a communication object identification part. When an expression method is directed from an expression method selecting part, position information is generated according to this and it is provided for a communications partner. The above enables it to use selectively an expression method of two or more position information properly according to a communications partner.

[0023]In a positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner, A communication object identification part which identifies classification of a communications partner, and classification of a communications partner and a correspondence relation of two or more groups who set beforehand, An expression method storing part which memorizes an expression method of two or more position information which differs in display accuracy, and each expression method and each group's correspondence relation, According to the positional information display provided with an expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a discriminated result in a communication object identification part, and a memory content of an expression method storing part, a communications partner can be managed per group and an expression method can be chosen.

[0024]

[Embodiment of the Invention]drawing 3 is what an example of an embodiment of the invention is shown for -- the inside of a figure, and 11 -- a position detector and 12 -- a position-memory part and 13 -- as for an expression method storing part and 17, a position information indicator and 15 are [a communication object identification part and 19] control sections an expression method selecting part and 18 a communication processing part and 16 a position information

generation part and 14.

[0025]The position detectors 11 are concrete position sensing devices, such as GPS, perform positioning/detection of the position of a user with a device, whenever there are directions from the control section 19, or whenever change arises to detection information, they send this out to the position-memory part 12, and they make it memorize.

[0026]A "pursuit service telephone" can be used as a collection method of concrete position information. This is a system which transmits automatically the telephone which detected the possessor of the wireless card and the user's seat got to the terminal of the user neighborhood. User detection area is a little less than 3 m in radius from a terminal, and an external system is provided with location registration information by the service control node.

[0027]Other users' position information is acquired by the communication which the communication processing part 15 performs, by directions of the control section 19, from the communication processing part 15, is sent out to the position-memory part 12, and is memorized.

[0028]The position-memory part 12 sends out the memorized detection information to the position information generation part 13 with directions of the control section 19.

[0029]The expression method storing part 16 has registered information required for the position information generation set up after agreeing a priori among users or between a user and a system, including the conversion table of the expression method of position information, an expression method, and an application user, the production rule of position information, etc.

[0030]The expression method which the expression method storing part 16 has memorized is shown to a user by the display by the position information indicator 14. Out of the shown expression method, a user chooses the expression method to wish and notifies to the expression method selecting part 17.

[0031]The expression method selecting part 17 chooses the expression method actually applied to generation of position information by making into a judgment source the expression method, the object user of the localization, and the memory information on the expression method storing part 16 for which the user wished. When it is judged that applying [which a user wishes] of an expression method is impossible, or it is prohibition, the expression method selecting part 17 forbids generation of position information, or chooses other applicable expression methods (low expression method of a detailed degree, etc.) as an alternative method.

[0032]The position information generation part 13 will ask the expression method applied to the expression method selecting part 17, if directions of the position information generation from the control section 19 are received. The position information generation part 13 takes out the production rule about the expression method specified by the expression method selecting

part 17 from the expression method storing part 16, In accordance with the production rules (example: the contraction scale in the case of using the media selection of a sound / character / map, and a map, the updating time of a display, etc.), the position information with which a user is actually provided is generated based on the detection information sent out from the position-memory part 12.

[0033]According to a user's demand (updating for every fixed time is included.), the position information indicator 14 requires generation of position information of the position information generation part 13 via the control section 19, and displays on a user the position information which the position information generation part 13 generates and sends out.

[0034]When there is an inquiry about a position from other users or computer programs, the communication processing part 15 asks, a demand is detected, and it notifies to the control section 19 and the communication object identification part 18. With reference to the expression method which the discernment and the expression method storing part 16 of a communications partner which the communication object identification part 18 performs memorize and which can be provided, the expression method selecting part 17 chooses an expression method.

[0035]The control section 19 receives the notice from the communication processing part 15, and directs generation of the position information for passing the position information generation part 13 at a communications partner. According to expression method selection of the expression method selecting part 17, the position information generation part 13 takes out a production rule from the expression method storing part 16, and generates position information. Completion of the position information generation in the position information generation part 13 is notified to the control section 19, and is further notified to the communication processing part 15 from the control section 19.

[0036]Receiving the notice of the completion of position information generation from the control section 19, the communication processing part 15 receives position information from the position information generation part 13, and communicates position information to a communications partner.

[0037]It becomes possible to use the expression method of position information properly selectively by such composition according to the partner who communicates. The function described here can also be realized with the software of a computer.

[0038]Drawing 4 shows the outline of each part corresponding to the concrete example of use of this invention, and shows the example which used the display accuracy of position information properly by to any a communications partner shall belong between "the coworker of a place of work", a "family", and a "friend" here.

[0039]The communication object identification part 18 is provided with the user identification table for identifying to any each communications partner shall belong between "the coworker of

a place of work", a "family", and a "friend", and identifies it with reference to this table. The expression method storing part 16 is provided with the following.

The group correspondence table which registers applying the group's B rule to a "family" and applying the group's C rule for the group's A rule to a "friend" respectively into "the coworker of a place of work."

The position information production rule which registered whether the reference to each group for every expression method of the position information mentioned above would be permitted (table).

The expression method selecting part 17 chooses the actually applied expression method from the discriminated result of the communication object identification part 18, and the memory information on the expression method storing part 16. Based on selection of an expression method selecting part, a position information generation part carries out actual position information generation.

[0040]It becomes possible to share position information between a suitable detailed degree, presenting of the position information by a different expression method according to a communications partner being attained by this, and aiming at protection of privacy.

[0041]It turns out that drawing 5 shows the situation of offer of the position information by this invention, and "dearth of information" and "infringement of privacy" are not caused compared with the example of corresponding drawing 2.

[0042]According to the current position of time or a user, by changing dynamically the identifying method in a communication object identification part, or the memory content of an expression method storing part, a different expression method also to the same communications partner can be applied, and presenting of the dynamic position information according to a situation is attained.

[0043]A third party's positional information display connected to the communication network is able to carry out processing explained above instead of a user's device. Therefore, it can guess easily that it is possible to incorporate this invention as a function of the communication network itself by connecting the positional information display only for service to a communication network.

[0044]

[Effect of the Invention]As explained above, according to this invention, in the situation of sharing position information among users, it becomes possible via a communication network to use the expression method of position information properly selectively according to a communications partner. Although there was a problem that "shortage of required information" arose for some partners, or "infringement of the privacy using excessive information" arose and there was a situation of being hard to share position information, in the conventional unicentric expression method, According to this invention, proper use of the position

information expression like "giving an intimate partner rough position information for detailed position information at the partner who is not so" is attained, and position information shared implementation becomes easy.

[0045]By checking the position of the partner of a remote place a priori, prediction of a user is to some extent attained in a partner's situation, and it becomes possible to reduce generating of "troublesome communication which does not understand the time and a place." thereby -- "-- always - it contributes to facilitation of the communication between users in the mobile news agency meeting in which" communication is possible anywhere.

[0046]It can contribute to realization of the new informational service using position information which uses a user's position information for a retrieval key word by eliminating a user's anxiety over infringement of privacy further again.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any
damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention]This invention relates to the position information method of presentation which displays the present position (address) on a communications partner, and its device.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art]In recent years, mobile communication technology progresses and society that many users use mobile communications is being realized. Under the present circumstances, if a user's position can be detected and this can be displayed on other users, It is utilizable for the service and application using position information including the information retrieval (when a user is in Shinjuku Station, the restaurant around Shinjuku Station is notified) which can support smooth communication of the users which are present in a remote place and from which a user's position serves as a keyword.

[0003]As concrete detecting position art, the non-contact badge (a feeble radio wave and infrared rays are used) in the enclosure of positioning by GPS (Global Positioning System) carried in the car etc. and the detecting position by the base station information of a cellular phone or PHS, etc. are mentioned.

[0004]In order to utilize for service or application the position information acquired by such detecting position art and to receive the benefit, it is necessary to provide one's position information to users and computer programs other than oneself.

[0005]Drawing 1 shows an example of the conventional positional information display, and, as for a position information generation part and 4, a position detector and 2 are [a communication processing part and 6] control sections a position information indicator and 5 a position-memory part and 3 one among a figure.

[0006]The position detectors 1 are concrete position sensing devices, such as GPS. Positioning/detection of the position of a user with a device are performed, whenever there are directions from the control section 6, or whenever change arises to detection information, this is sent out to the position-memory part 2, and it is made to memorize.

Other users' position information is acquired by the communication which the communication processing part 5 performs, by directions of the control section 6, from the communication processing part 5, is sent out to the position-memory part 2, and is memorized.

[0007]The position-memory part 2 sends out the memorized detection information to the position information generation part 3 with directions of the control section 6.

[0008]The position information generation part 3 generates the position information with which a user and other programs are provided based on the detection information sent from the position-memory part 2, and sends out the this generated information to the position information indicator 4 according to directions of the control section 6.

[0009]The position information indicator 4 requires generation of position information of the position information generation part 3 via the control section 6 according to a user's demand (updating for every fixed time is included.), and displays the position information which the position information generation part 3 generates and sends out to a user.

[0010]When there is an inquiry about a position from other users or computer programs, the communication processing part 5 asks, a demand is detected, and it notifies to the control section 6. The control section 6 receives the notice from the communication processing part 5, and it takes out directions to the position-memory part 2 so that the information which the position-memory part 2 memorizes may be sent out to the communication processing part 5. The communication processing part 5 sends out the sent position information to other users and programs.

[0011]Although the explanation mentioned above described the case where the user itself owned a position sensing device, About the case where the information which a PHS network manages, the local area network for which a non-contact badge is detected, etc. are used, its position information as well as other users' position information can be acquired by communication which the communication processing part 5 performs.

[0012]As explained above, in exchange of position information with other users, the information which the position-memory part 2 memorizes was conventionally passed to the other party as it was. For this reason, the utilizing method and the method of presentation of information across which the same information will go across to every partner, and it went were also left to the other party. In order to provide all the partners with information by the same expressive form, it was difficult to apply several different expressive form according to a partner. Therefore, the anxiety over a user's "infringement of privacy" will follow on realization of the application using sharing of position information, or position information, and it has become one of the causes by which use does not progress.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention]As explained above, according to this invention, in the situation of sharing position information among users, it becomes possible via a communication network to use the expression method of position information properly selectively according to a communications partner. Although there was a problem that "shortage of required information" arose for some partners, or "infringement of the privacy using excessive information" arose and there was a situation of being hard to share position information, in the conventional unicentric expression method, According to this invention, proper use of the position information expression like "giving an intimate partner rough position information for detailed position information at the partner who is not so" is attained, and position information shared implementation becomes easy.

[0045]By checking the position of the partner of a remote place a priori, prediction of a user is to some extent attained in a partner's situation, and it becomes possible to reduce generating of "troublesome communication which does not understand the time and a place." thereby -- "-- always - it contributes to facilitation of the communication between users in the mobile news agency meeting in which" communication is possible anywhere.

[0046]It can contribute to realization of the new informational service using position information which uses a user's position information for a retrieval key word by eliminating a user's anxiety over infringement of privacy further again.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]in the society where mobile communication developed truly -- "-- always - since the situation of a communications partner is not known a priori while" communication is attained anywhere, "troublesome communication which does not understand the time and a place" from the others increases. Since prediction of a partner's situation is to some extent attained by what a partner's position understands a priori, sharing of position information is effective in facilitation of communication.

[0014]In the Prior art, the position information acquired by the detecting position is shown to the others by the unicentric mode of expression. Since the same position information is provided to every partner (other users, computer programs, etc.) (display), As shown in drawing 2, there was a problem that "shortage of required information" arose for some partners, or "infringement of the privacy using excessive information" arose, and there was a problem that sharing of position information was not effectively done among users as a result.

[0015]This originates in the ability not to perform proper use of the alternative position information expression like "giving an intimate partner rough position information for detailed position information at the partner who is not so."

[0016]The purpose of this invention by making applicable the mode of expression of different position information according to the character of the user and group who become a providing object, Preventing "shortage of required information" and "infringement of privacy by an excessive offer of information", users' situation understanding is promoted and it is shown in attaining facilitation of communication.

[0017]Other purposes of this invention are to make easy realization of the informational service using sharing of position information, or position information by reducing a user's anxiety over infringement of privacy.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem]In this invention, in order to solve said SUBJECT, a position is always detected, and when there is an inquiry, in the position information method of presentation which displays the present position to an inquiry of a position from a communications partner, the present position is displayed in display accuracy beforehand defined according to a communications partner.

[0019]Under the present circumstances, while carrying out the group division of the communications partner beforehand at two or more groups, when display accuracy of position information is defined for every group and there is an inquiry. A group to whom an inquiry partner belongs among said two or more groups is identified, and it may be made to display the present position in display accuracy corresponding to this group.

[0020]Thereby, proper use of an expression method of alternative position information like "giving an intimate partner rough position information for detailed position information at a partner who is not so" is attained.

[0021]In a positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner in this invention, A communication object identification part which identifies a communications partner, and an expression method of two or more position information which differs in display accuracy, A positional information display provided with an expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a memory content of an expression method storing part which memorizes correspondence relation between each expression method and a communications partner, and a discriminated result in a communication object identification part and an expression method storing part is proposed.

[0022]If the necessity of providing other users and computer programs with position information occurs according to said composition, a communication object identification part

will identify the communications partner. On the other hand, an expression method of position information with which a communication object is actually provided is determined that it is an expression method selecting part based on discernment of a communication object by a communication object identification part. When an expression method is directed from an expression method selecting part, position information is generated according to this and it is provided for a communications partner. The above enables it to use selectively an expression method of two or more position information properly according to a communications partner.

[0023] In a positional information display which always detects a position and displays the present position to an inquiry of a position from a communications partner, A communication object identification part which identifies classification of a communications partner, and classification of a communications partner and a correspondence relation of two or more groups who set beforehand, An expression method storing part which memorizes an expression method of two or more position information which differs in display accuracy, and each expression method and each group's correspondence relation, According to the positional information display provided with an expression method selecting part which chooses an expression method of position information displayed on a communications partner according to a discriminated result in a communication object identification part, and a memory content of an expression method storing part, a communications partner can be managed per group and an expression method can be chosen.

[0024]

[Embodiment of the Invention] drawing 3 is what an example of an embodiment of the invention is shown for -- the inside of a figure, and 11 -- a position detector and 12 -- a position-memory part and 13 -- as for an expression method storing part and 17, a position information indicator and 15 are [a communication object identification part and 19] control sections an expression method selecting part and 18 a communication processing part and 16 a position information generation part and 14.

[0025] The position detectors 11 are concrete position sensing devices, such as GPS, perform positioning/detection of the position of a user with a device, whenever there are directions from the control section 19, or whenever change arises to detection information, they send this out to the position-memory part 12, and they make it memorize.

[0026] A "pursuit service telephone" can be used as a collection method of concrete position information. This is a system which transmits automatically the telephone which detected the possessor of the wireless card and the user's seat got to the terminal of the user neighborhood. User detection area is a little less than 3 m in radius from a terminal, and an external system is provided with location registration information by the service control node.

[0027] Other users' position information is acquired by the communication which the communication processing part 15 performs, by directions of the control section 19, from the

communication processing part 15, is sent out to the position-memory part 12, and is memorized.

[0028]The position-memory part 12 sends out the memorized detection information to the position information generation part 13 with directions of the control section 19.

[0029]The expression method storing part 16 has registered information required for the position information generation set up after agreeing a priori among users or between a user and a system, including the conversion table of the expression method of position information, an expression method, and an application user, the production rule of position information, etc.

[0030]The expression method which the expression method storing part 16 has memorized is shown to a user by the display by the position information indicator 14. Out of the shown expression method, a user chooses the expression method to wish and notifies to the expression method selecting part 17.

[0031]The expression method selecting part 17 chooses the expression method actually applied to generation of position information by making into a judgment source the expression method, the object user of the localization, and the memory information on the expression method storing part 16 for which the user wished. When it is judged that applying [which a user wishes] of an expression method is impossible, or it is prohibition, the expression method selecting part 17 forbids generation of position information, or chooses other applicable expression methods (low expression method of a detailed degree, etc.) as an alternative method.

[0032]The position information generation part 13 will ask the expression method applied to the expression method selecting part 17, if directions of the position information generation from the control section 19 are received. The position information generation part 13 takes out the production rule about the expression method specified by the expression method selecting part 17 from the expression method storing part 16, In accordance with the production rules (example: the contraction scale in the case of using the media selection of a sound / character / map, and a map, the updating time of a display, etc.), the position information with which a user is actually provided is generated based on the detection information sent out from the position-memory part 12.

[0033]According to a user's demand (updating for every fixed time is included.), the position information indicator 14 requires generation of position information of the position information generation part 13 via the control section 19, and displays on a user the position information which the position information generation part 13 generates and sends out.

[0034]When there is an inquiry about a position from other users or computer programs, the communication processing part 15 asks, a demand is detected, and it notifies to the control section 19 and the communication object identification part 18. With reference to the

expression method which the discernment and the expression method storing part 16 of a communications partner which the communication object identification part 18 performs memorize and which can be provided, the expression method selecting part 17 chooses an expression method.

[0035]The control section 19 receives the notice from the communication processing part 15, and directs generation of the position information for passing the position information generation part 13 at a communications partner. According to expression method selection of the expression method selecting part 17, the position information generation part 13 takes out a production rule from the expression method storing part 16, and generates position information. Completion of the position information generation in the position information generation part 13 is notified to the control section 19, and is further notified to the communication processing part 15 from the control section 19.

[0036]Receiving the notice of the completion of position information generation from the control section 19, the communication processing part 15 receives position information from the position information generation part 13, and communicates position information to a communications partner.

[0037]It becomes possible to use the expression method of position information properly selectively by such composition according to the partner who communicates. The function described here can also be realized with the software of a computer.

[0038]Drawing 4 shows the outline of each part corresponding to the concrete example of use of this invention, and shows the example which used the display accuracy of position information properly by to any a communications partner shall belong between "the coworker of a place of work", a "family", and a "friend" here.

[0039]The communication object identification part 18 is provided with the user identification table for identifying to any each communications partner shall belong between "the coworker of a place of work", a "family", and a "friend", and identifies it with reference to this table. The expression method storing part 16 is provided with the following.

The group correspondence table which registers applying the group's B rule to a "family" and applying the group's C rule for the group's A rule to a "friend" respectively into "the coworker of a place of work."

The position information production rule which registered whether the reference to each group for every expression method of the position information mentioned above would be permitted (table).

The expression method selecting part 17 chooses the actually applied expression method from the discriminated result of the communication object identification part 18, and the memory information on the expression method storing part 16. Based on selection of an expression method selecting part, a position information generation part carries out actual position

information generation.

[0040]It becomes possible to share position information between a suitable detailed degree, presenting of the position information by a different expression method according to a communications partner being attained by this, and aiming at protection of privacy.

[0041]It turns out that drawing 5 shows the situation of offer of the position information by this invention, and "dearth of information" and "infringement of privacy" are not caused compared with the example of corresponding drawing 2.

[0042]According to the current position of time or a user, by changing dynamically the identifying method in a communication object identification part, or the memory content of an expression method storing part, a different expression method also to the same communications partner can be applied, and presenting of the dynamic position information according to a situation is attained.

[0043]A third party's positional information display connected to the communication network is able to carry out processing explained above instead of a user's device. Therefore, it can guess easily that it is possible to incorporate this invention as a function of the communication network itself by connecting the positional information display only for service to a communication network.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The lineblock diagram showing an example of the conventional positional information display

[Drawing 2]The key map of the conventional position information display

[Drawing 3]The lineblock diagram showing an example of the embodiment of the positional information display of this invention

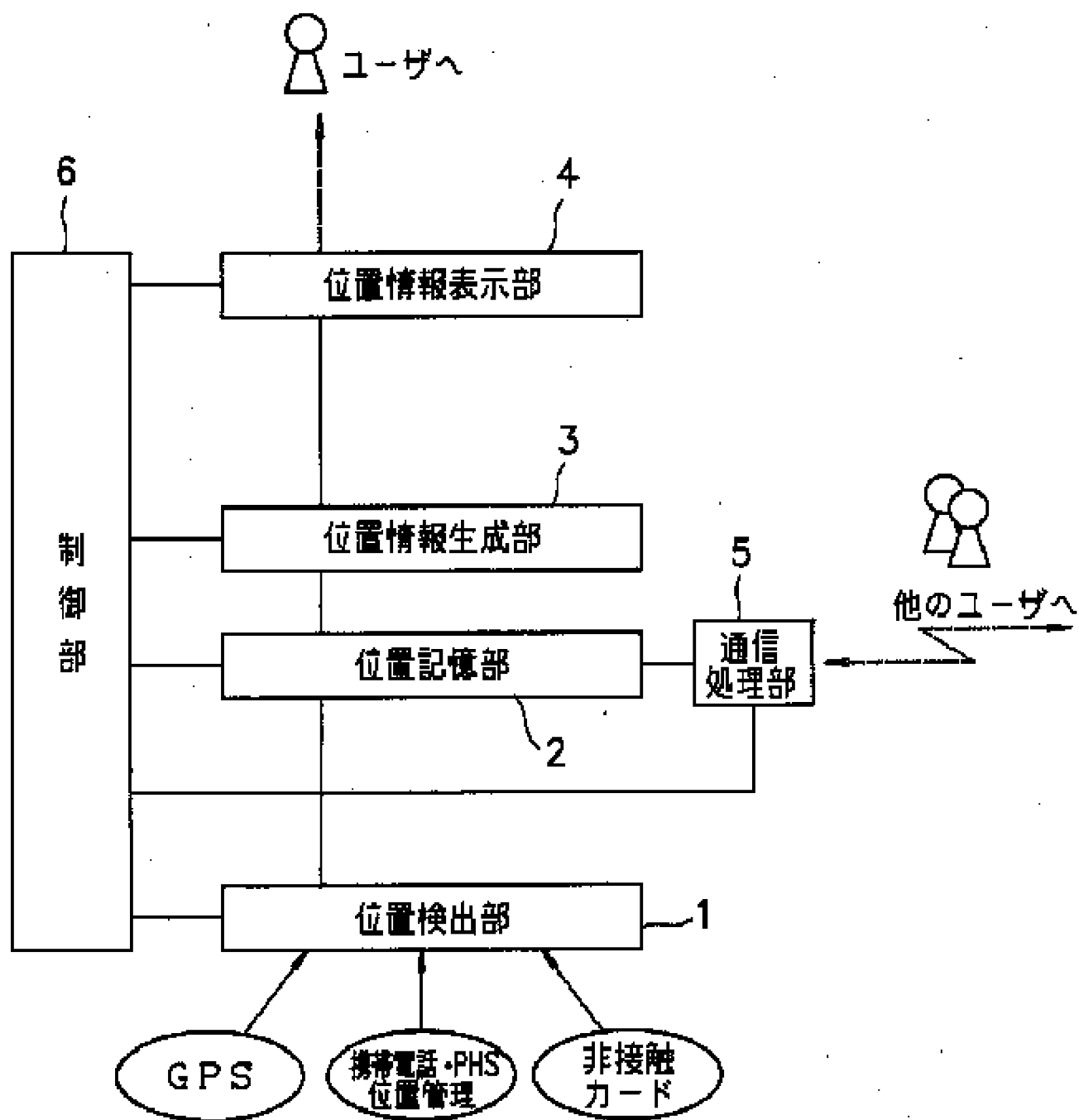
[Drawing 4]The schematic diagram of each part corresponding to the example of use of this invention

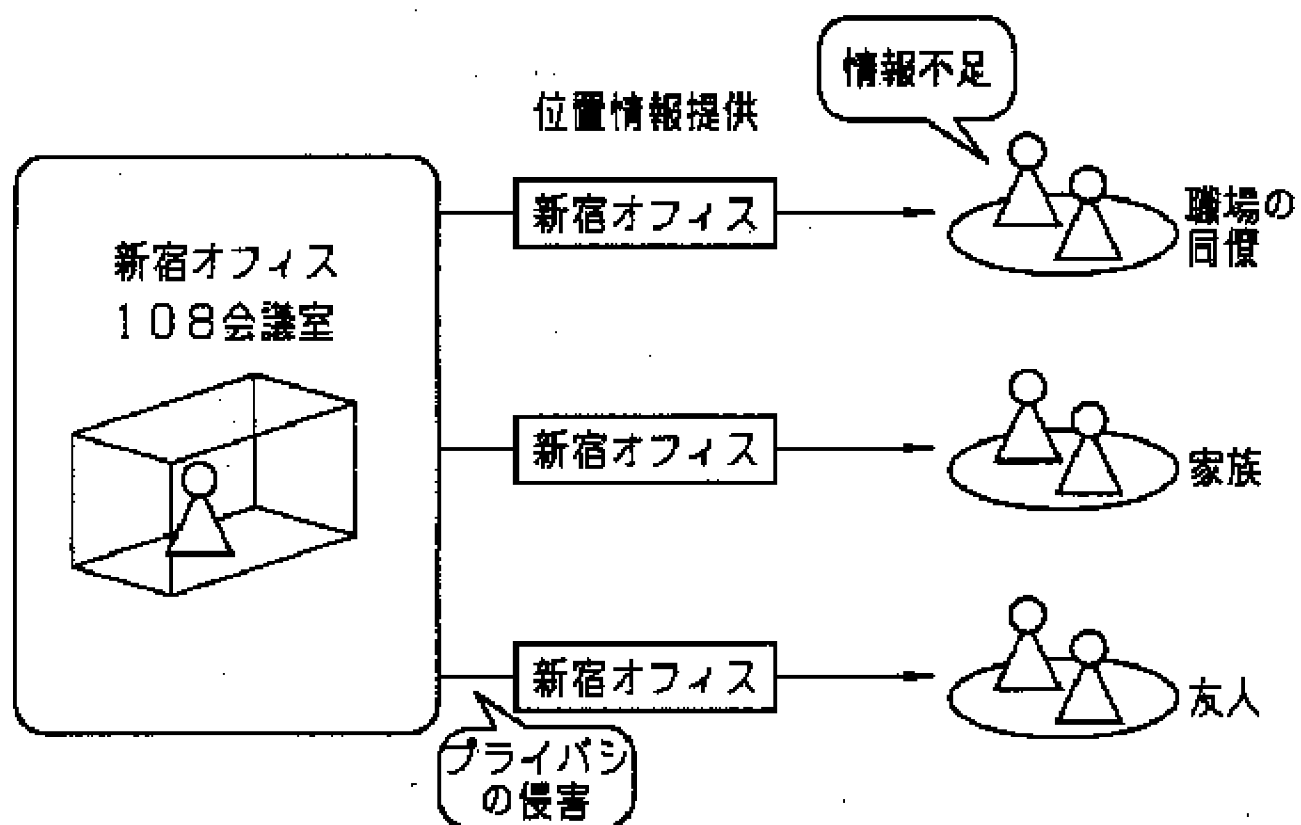
[Drawing 5]The key map of a position information display of this invention

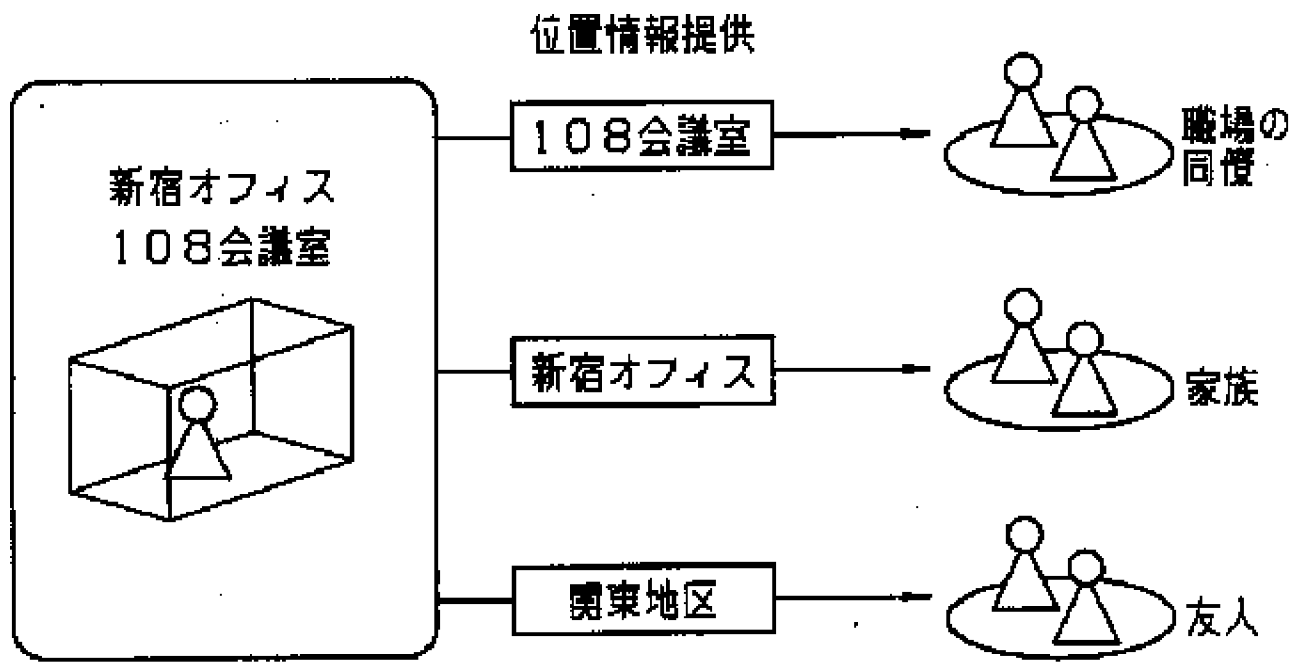
[Description of Notations]

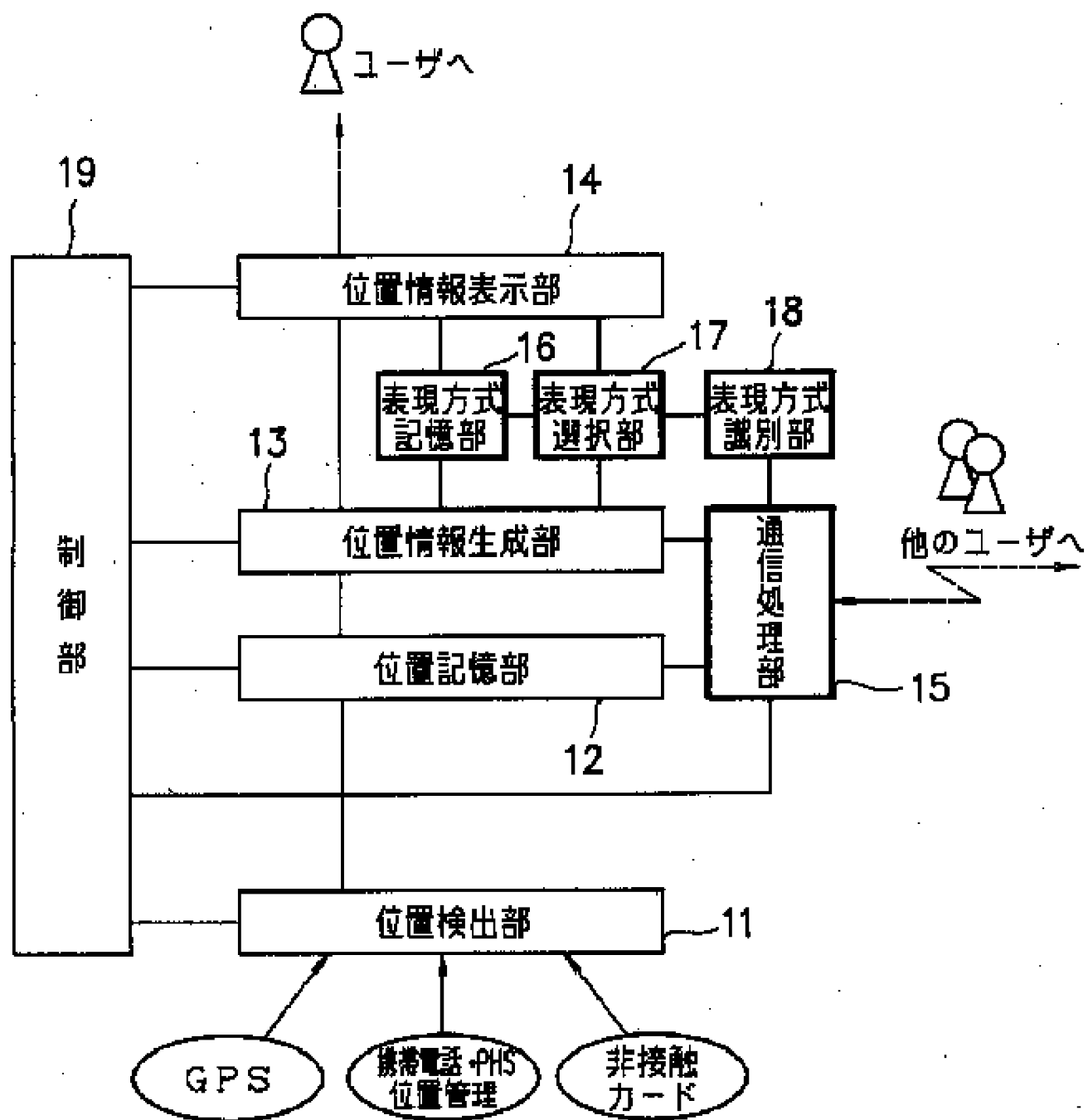
11 [-- A position information indicator, 15 / -- A communication processing part, 16 / -- An expression method storing part, 17 / -- An expression method selecting part, 18 / -- A communication object identification part, 19 / -- Control section.] -- A position detector, 12 -- A position-memory part, 13 -- A position information generation part, 14

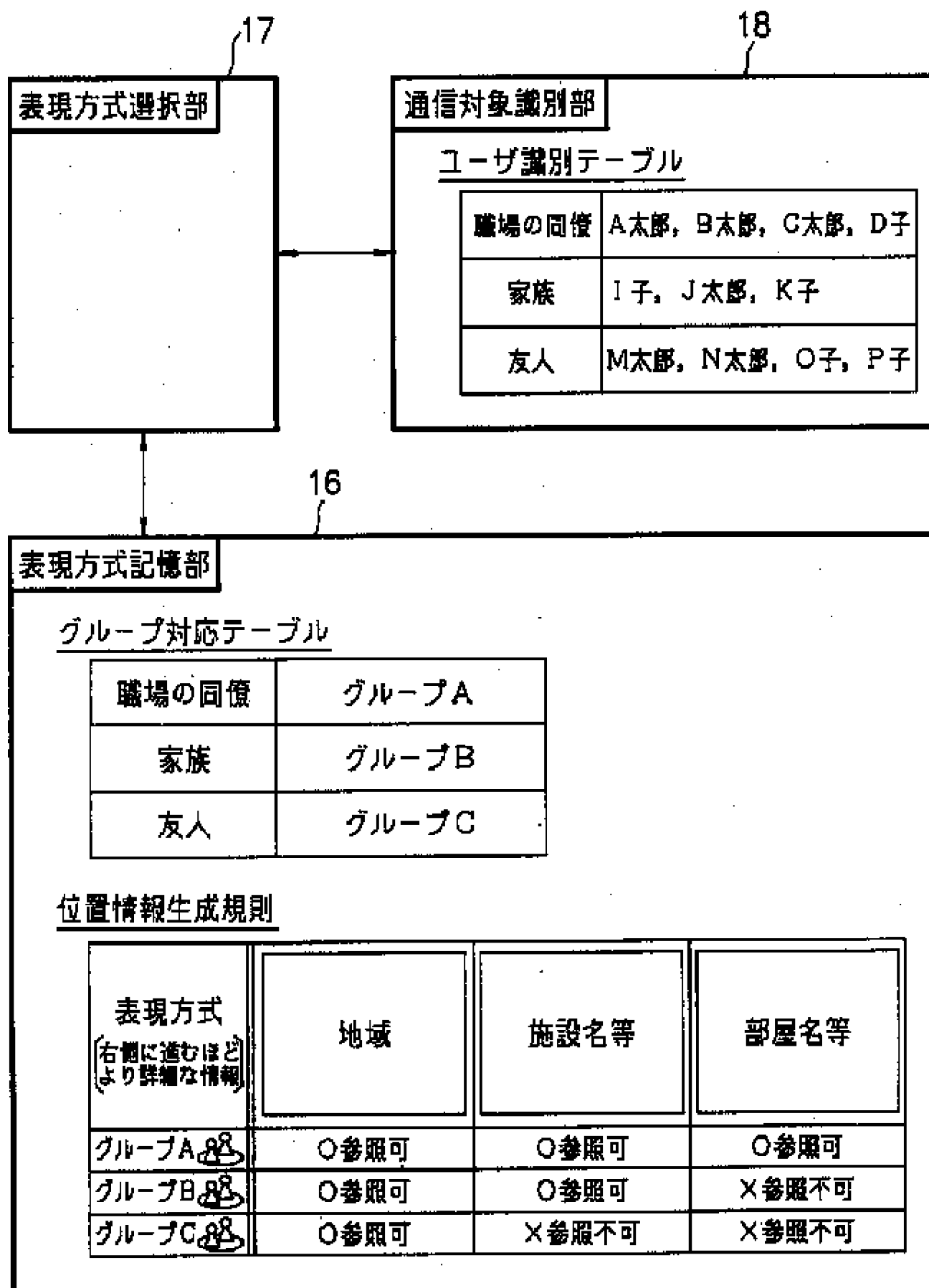
[Translation done.]











(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-170625

(43) 公開日 平成10年(1998) 6月26日

(51) Int.Cl.⁸ 分類記号

G 0 1 S 5/02

H 0 4 Q 7/38

P I

G 0 1 S 5/02

H 0 4 B 7/26

H 0 4 Q 7/04

Z

1 0 9 H

D

審査請求 未請求 請求項の数4 O L (全 6 頁)

(21) 出願番号 特願平8-331037

(22) 出願日 平成8年(1996)12月11日

特許法第30条第1項適用申請有り 平成8年9月4日
 社団法人情報処理学会発行の「第53回(平成8年後期)
 全国大会講演論文集(4)」に発表

(71) 出願人 000004226

日本電信電話株式会社

東京都新宿区西新宿三丁目19番2号

(72) 発明者 前田 典彦

東京都新宿区西新宿3丁目19番2号 日本
電信電話株式会社内

(72) 発明者 萩原 正敏

東京都新宿区西新宿3丁目19番2号 日本
電信電話株式会社内

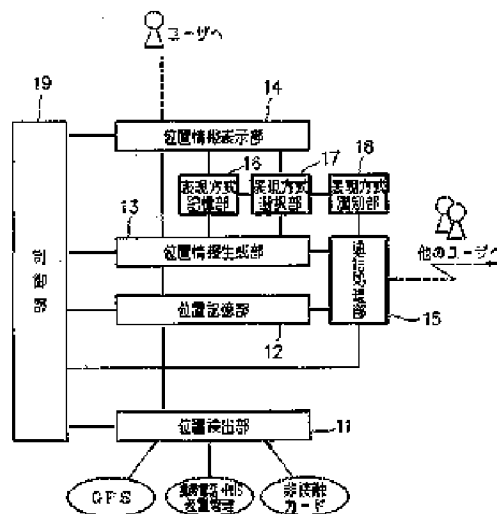
(74) 代理人 弁理士 宮田 裕孝

(54) 【発明の名称】 位置情報表示方法及びその装置

(57) 【要約】

【課題】 情報不足やプライバシー侵害の恐れのない
 位置情報表示方法及びその装置を提供すること。

【解決手段】 表現方式記憶部16に、表示精度の異なる複数の位置情報の表現方式と、各表現方式及び通信相手の対応関係とを記憶しておき、他のユーザからの位置の問い合わせが通信処理部15に届いた場合、通信対象識別部18にて通信相手を識別し、その結果と表現方式記憶部16の記憶内容とから表現方式選択部17で位置情報の表現方式を選択し、位置検出部11で検出され、位置記憶部12に記憶された情報に基づいて位置情報生成部13にて位置情報を生成することにより、通信相手に応じた精度の位置情報の提供(表示)を可能とする。



【特許請求の範囲】

【請求項 1】 位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示方法において、

問い合わせがあった場合、通信相手に応じて予め定めた表示精度にて現在の位置の表示を行うことを特徴とする位置情報表示方法。

【請求項 2】 位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示方法において、

予め通信相手を複数のグループにグループ分けしておくとともに各グループ毎に位置情報の表示精度を定めておき、

問い合わせがあった場合には、前記複数のグループのうち、問い合わせ相手が属するグループを識別し、

該グループに対応する表示精度にて現在の位置の表示を行うことを特徴とする位置情報表示方法。

【請求項 3】 位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示装置において、

通信相手を識別する通信対象識別部と、

表示精度の異なる複数の位置情報の表現方式と、各表現方式及び通信相手の対応関係とを記憶する表現方式記憶部と、

通信対象識別部での識別結果及び表現方式記憶部の記憶内容に応じて通信相手に表示する位置情報の表現方式を選択する表現方式選択部とを備えたことを特徴とする位置情報表示装置。

【請求項 4】 位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示装置において、

通信相手の識別を識別する通信対象識別部と、

通信相手の識別及び予め定めた複数のグループの対応関係と、表示精度の異なる複数の位置情報の表現方式と、各表現方式及び各グループの対応関係とを記憶する表現方式記憶部と、

通信対象識別部での識別結果及び表現方式記憶部の記憶内容に応じて通信相手に表示する位置情報の表現方式を選択する表現方式選択部とを備えたことを特徴とする位置情報表示装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、現在の位置（所在地）を通信相手に表示する位置情報表示方法及びその装置に関するものである。

【0002】

【従来の技術】近年、移動体通信技術が発達し、多くのユーザが移動体通信を利用するような社会が実現されつつある。この際、ユーザの位置を検出でき、これを他のユーザに表示できれば、遠隔地にいるユーザ同士の円滑

(2) 特開平 10-170625

2

なコミュニケーションを支援することができ、また、ユーザの位置がキーワードとなる情報検索（例えば、ユーザが新宿駅にいる場合、新宿駅周辺の飲食店を通知）を始めとする、位置情報を利用したサービスやアプリケーションに活用できる。

【0003】具体的な位置検出技術として、自動車等に搭載されている GPS（Global Positioning System）による測位、携帯電話や PHS の基地局情報による位置検出、構内における非接触バッジ（微弱電波や赤外線を利用）等が挙げられる。

【0004】これらの位置検出技術によって得られた位置情報をサービスやアプリケーションに活用し、その恩恵を受けるには、自分の位置情報を自分以外のユーザやコンピュータプログラムに対して提供することが必要となる。

【0005】図 1 は従来の位置情報表示装置の一例を示すもので、図中、1 は位置検出部、2 は位置記憶部、3 は位置情報生成部、4 は位置情報表示部、5 は通信処理部、6 は制御部である。

【0006】位置検出部 1 は、GPS 等の具体的な位置検出装置であり、装置を持つユーザの位置の測位／検出を行い、制御部 6 からの指示がある度または検出情報に変化が生じる度に、これを位置記憶部 2 に送出し、記憶させる。また、他のユーザの位置情報は、通信処理部 5 が行う通信によって獲得され、制御部 6 の指示によって通信処理部 5 から位置記憶部 2 に送出され、記憶される。

【0007】位置記憶部 2 は、制御部 6 の指示により、記憶している検出情報を位置情報生成部 3 に送出する。

【0008】位置情報生成部 3 は、位置記憶部 2 から送られてきた検出情報を元に、ユーザや他のプログラムに提供する位置情報を生成し、該生成した情報を制御部 6 の指示に従って位置情報表示部 4 に送出する。

【0009】位置情報表示部 4 は、ユーザの要求（一定時間毎の更新を含む。）に従い、制御部 6 を介して位置情報生成部 3 に位置情報の生成を要求し、位置情報生成部 3 が生成・送出する位置情報をユーザに対して表示する。

【0010】また、他のユーザもしくはコンピュータプログラム等から位置に関する問い合わせがある場合、通信処理部 5 が問い合わせ要求を検知し、制御部 6 に通知する。制御部 6 は通信処理部 5 からの通知を受け、位置記憶部 2 が記憶する情報を通信処理部 5 に送出するよう位置記憶部 2 に指示を出す。通信処理部 5 は、送られてきた位置情報を他のユーザやプログラムに送出する。

【0011】なお、前述した説明ではユーザ自身が位置検出装置を所有する場合について述べたが、PHS ネットワークが管理する情報や、非接触バッジを検知する構内ネットワーク等を利用する場合については、他のユーザの位置情報と同様に、自分の位置情報も通信処理部 5

(3)

特開平10-170625

3

4

が行う通信によって獲得可能である。

【0012】以上に説明したように、従来は他のユーザとの位置情報の交換において、位置記憶部2が記憶する情報をそのまま相手側に渡していた。このため、どの相手に対しても同一の情報が渡ることになり、渡った情報の利用方法や表示方法も相手側に委ねられていた。また、全ての相手に、同一の表現形式で情報を提供するため、相手に応じて複数の異なった表現形式を適用することが困難となっていた。従って、位置情報の共有や位置情報を利用するアプリケーションの実現には、ユーザの「プライバシーの侵害」に対する不安が伴うことになり、利用が進まない原因の一つとなってきた。

【0013】

【発明が解決しようとする課題】モバイル通信が真に発展した社会においては、「いつでも・どこでも」コミュニケーションが可能となる反面、事前に通信相手の状況がわからないため、他者からの「時と場所をわきまえない迷惑な通信」も増加する。事前に相手の位置がわかることで、相手の状況がある程度予測可能となるため、位置情報の共有はコミュニケーションの円滑化に有効である。

【0014】従来の技術では、位置検出によって得られた位置情報が、単一的な表現方法によって他者に示されている。どの相手（他のユーザやコンピュータプログラム等）に対しても同一の位置情報を提供（表示）するため、図2に示すように、相手によっては「必要情報の不足」が生じたり、「過度な情報によるプライバシーの侵害」が生じるという問題があり、結果としてユーザ間で位置情報の共有が効果的に行なわれないという問題があった。

【0015】これは、「親しい相手には詳しい位置情報を、そうでない相手には大まかな位置情報を伝える」といったような、選択的な位置情報表現の使い分けができないことに起因するものである。

【0016】本発明の目的は、提供対象となるユーザやグループの性格に応じて、異なった位置情報の表現方法を適用可能とすることにより、「必要情報の不足」や「過度な情報提供によるプライバシーの侵害」を防ぎつつ、ユーザ同士の状況理解を促進し、コミュニケーションの円滑化を図ることにある。

【0017】また、本発明の他の目的は、プライバシーの侵害に対するユーザの不安を低減させることによって、位置情報の共有や位置情報を利用する情報提供サービスの実現を容易にすることにある。

【0018】

【課題を解決するための手段】本発明では前記課題を解決するため、位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示方法において、問い合わせがあった場合、通信相手に応じて予め定めた表示精度にて現在の位置の表示を行う。

【0019】この際、予め通信相手を複数のグループにグループ分けしておくとともに各グループ毎に位置情報の表示精度を定めておき、問い合わせがあった場合には、前記複数のグループのうち、問い合わせ相手が属するグループを識別し、該グループに対応する表示精度にて現在の位置の表示を行うようにしても良い。

【0020】これにより、「親しい相手には詳しい位置情報を、そうでない相手には大まかな位置情報を伝える」といったような、選択的な位置情報の表現方式の使い分けが可能になる。

【0021】また、本発明では、位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示装置において、通信相手を識別する通信対象識別部と、表示精度の異なる複数の位置情報の表現方式と、各表現方式及び通信相手の対応関係とを記憶する表現方式記憶部と、通信対象識別部での識別結果及び表現方式記憶部の記憶内容に応じて通信相手に表示する位置情報の表現方式を選択する表現方式選択部とを備えた位置情報表示装置を提案する。

【0022】前記構成によれば、他のユーザやコンピュータプログラムに位置情報を提供する必要が発生すると、通信対象識別部がその通信相手を識別する。一方、実際に通信対象に提供する位置情報の表現方式は通信対象識別部による通信対象の識別に基づき、表現方式選択部によって決定される。表現方式選択部から表現方式が指示されると、これに従って位置情報が生成され、通信相手に提供される。以上により、通信相手に応じて複数の位置情報の表現方式を選択的に使い分けることが可能になる。

【0023】また、位置を常時検出し、通信相手からの位置の問い合わせに対して現在の位置を表示する位置情報表示装置において、通信相手の種別を識別する通信対象識別部と、通信相手の種別及び予め定めた複数のグループの対応関係と、表示精度の異なる複数の位置情報の表現方式と、各表現方式及び各グループの対応関係とを記憶する表現方式記憶部と、通信対象識別部での識別結果及び表現方式記憶部の記憶内容に応じて通信相手に表示する位置情報の表現方式を選択する表現方式選択部とを備えた位置情報表示装置によれば、通信相手をグループ単位で管理し、表現方式を選択することができる。

【0024】

【発明の実施の形態】図3は本発明の実施の形態の一例を示すもので、図中、11は位置検出部、12は位置記憶部、13は位置情報生成部、14は位置情報表示部、15は通信処理部、16は表現方式記憶部、17は表現方式選択部、18は通信対象識別部、19は制御部である。

【0025】位置検出部11は、GPS等の具体的な位置検出装置であり、装置を持つユーザの位置の測位／検出を行い、制御部19からの指示がある度または検出情

報に変化が生じる度に、これを位置記憶部12に送出し、記憶させる。

【0026】なお、具体的な位置情報の収集方法として、「追跡サービス電話」を利用できる。これは、ワイヤレスカードの所持者を検出し、そのユーザの自席にかかった電話を自動的にユーザ近辺の端末に転送するシステムである。ユーザ検出エリアは端末から半径300mであり、位置登録情報はサービス制御ノードによって外部システムに提供される。

【0027】また、他のユーザの位置情報は、通信処理部15が行う通信によって獲得され、制御部19の指示によって通信処理部15から位置記憶部12に送出され、記憶される。

【0028】位置記憶部12は、制御部19の指示により、記憶している検出情報を位置情報生成部13に送出する。

【0029】表現方式記憶部16は、ユーザ同士間またはユーザとシステムとの間で事前に合意の上で設定された、位置情報生成に必要な情報（位置情報の表現方式、表現方式と適用ユーザの対応表、位置情報の生成規則等）を登録している。

【0030】表現方式記憶部16が記憶している表現方式は、位置情報表示部14での表示によりユーザに示される。示された表現方式の中から、ユーザは希望する表現方式を選択し、表現方式選択部17に通知する。

【0031】表現方式選択部17は、ユーザが希望した表現方式、位置確認の対象ユーザ、表現方式記憶部16の記憶情報を判断材料として、位置情報の生成に実際に適用する表現方式を選択する。もし、ユーザの希望する表現方式の適用が不可能または禁止であると判断した場合、表現方式選択部17は、位置情報の生成を禁止したり、適用可能な他の表現方式（詳細度の低い表現方式等）を代替方式として選択する。

【0032】位置情報生成部13は、制御部19からの位置情報生成の指示を受けると、表現方式選択部17に対して適用する表現方式を問い合わせる。さらに、位置情報生成部13は、表現方式選択部17が指定する表現方式に関する生成規則を表現方式記憶部16から取り出し、その生成規則（例：音声／文字／地図のメディア選択、地図を用いる場合の縮尺、表示の更新時間等）に従って、位置記憶部12から送出される検出情報を元に、実際にユーザに提供する位置情報を生成する。

【0033】位置情報表示部14は、ユーザの要求（一定時間毎の更新を含む。）に従い、制御部19を介して位置情報生成部13に位置情報の生成を要求し、位置情報生成部13が生成・送出する位置情報をユーザに表示する。

【0034】また、他のユーザもしくはコンピュータプログラム等から位置に関する問い合わせがある場合、通信処理部15が問い合わせ要求を検知し、制御部19及

び通信対象識別部18に通知する。通信対象識別部18が行う通信相手の識別及び表現方式記憶部16が記憶する提供可能な表現方式を参照して、表現方式選択部17は表現方式の選択を行う。

【0035】制御部19は通信処理部15からの通知を受け、位置情報生成部13に通信相手に渡すための位置情報の生成を指示する。位置情報生成部13は表現方式選択部17の表現方式選択に従い、生成規則を表現方式記憶部16から取り出して位置情報の生成を行う。位置情報生成部13における位置情報生成の完了は、制御部19に通知され、さらに制御部19から通信処理部15に通知される。

【0036】制御部19からの位置情報生成完了の通知を受け、通信処理部15は位置情報生成部13から位置情報を受け取り、通信相手に位置情報を通信する。

【0037】このような構成により、通信する相手に応じて、位置情報の表現方式を選択的に使い分けことが可能となる。なお、ここに述べた機能はコンピュータのソフトウェアによって実現することも可能である。

【0038】図4は本発明の具体的な利用例に対応した各部の概要を示すもので、ここでは通信相手が「職場の同僚」、「家族」、「友人」のいずれに属するかによって位置情報の表示精度を使い分けた例を示す。

【0039】通信対象識別部18は、各通信相手が「職場の同僚」、「家族」、「友人」のいずれに属するかを識別するためのユーザ識別テーブルを備え、該テーブルを参照して識別する。表現方式記憶部16は、「職場の同僚」にはグループAの規則を、「家族」にはグループBの規則を、「友人」にはグループCの規則を各々適用するといったことを登録するグループ対応テーブルと、前述した位置情報の表現方式毎の各グループに対する参照を許可するか否かを登録した位置情報生成規則（テーブル）とを備えている。表現方式選択部17は、通信対象識別部18の識別結果と、表現方式記憶部16の記憶情報から、実際に適用する表現方式を選択する。なお、実際の位置情報生成は表現方式選択部の選択に基づき、位置情報生成部が実施する。

【0040】これにより、通信相手に応じた異なった表現方式による位置情報の表示が可能となり、プライバシーの保護を図りながら、適切な詳細度で位置情報の共有を行うことが可能となる。

【0041】図5は本発明による位置情報の提供のようすを示すもので、対応する図2の例に比べて「情報不足」や「プライバシーの侵害」を引き起こすことがないことがわかる。

【0042】なお、時刻やユーザの現在位置に応じて、通信対象識別部での識別方法または表現方式記憶部の記憶内容を動的に変化させることにより、同一の通信相手に対しても異なった表現方式を適用することができ、状況に応じた動的な位置情報の表示が可能となる。

(5)

特開平10-170625

7

【0043】また、以上説明した処理を、通信ネットワークに接続された第三者の位置情報表示装置がユーザの装置に代わって実施することも可能である。従って、サービス専用の位置情報表示装置を通信ネットワークに接続することにより、本発明を通信ネットワーク自体の機能として組み込むことが可能であることは容易に類推できる。

【0044】

【発明の効果】以上説明したように、本発明によれば、通信ネットワークを経由し、ユーザ間で位置情報を共有する状況において、通信相手に応じて位置情報の表現方式を選択的に使い分けことが可能となる。従来の単一的な表現方式では、相手によっては「必要情報の不足」が生じたり、「過度な情報によるプライバシーの侵害」が生じるという問題があり、位置情報の共有を実施し難い状況があったが、本発明によれば、「親しい相手には詳しい位置情報を、そうでない相手には大まかな位置情報を伝える」といったような、位置情報表現の使い分けが可能となり、位置情報共有の実施が容易となる。

【0045】また、遠隔地の相手の位置を事前に確認することで、ユーザは相手の状況にある程度予測可能とな

8

り、「時と場所をわきまえない迷惑な通信」の発生を低減することが可能となる。これにより、「いつでもどこでも」通信が可能なモバイル通信社会における、ユーザ間のコミュニケーションの円滑化に貢献する。

【0046】さらにまた、プライバシーの侵害に対するユーザの不安を排除することにより、ユーザの位置情報を検索キーワードに利用するような、位置情報を利用する新しい情報提供サービスの実現に寄与することができる。

【図面の簡単な説明】

【図1】従来の位置情報表示装置の一例を示す構成図

【図2】従来の位置情報表示の概念図

【図3】本発明の位置情報表示装置の実施の形態の一例を示す構成図

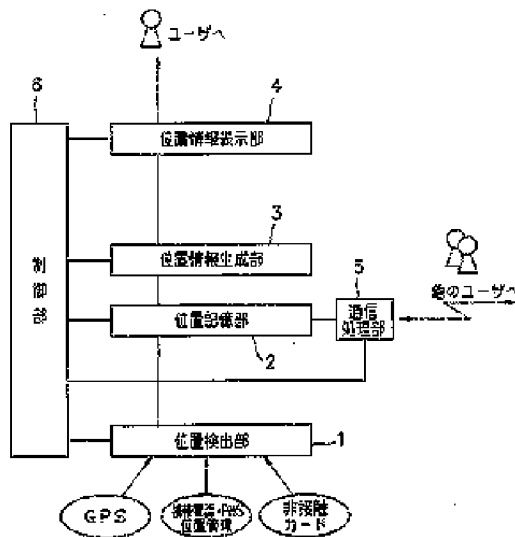
【図4】本発明の利用例に対応した各部の概要図

【図5】本発明の位置情報表示の概念図

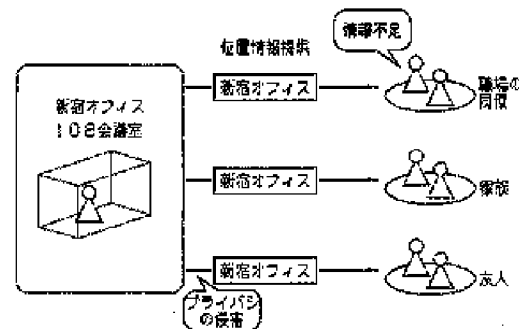
【符号の説明】

11…位置検出部、12…位置記憶部、13…位置情報生成部、14…位置情報表示部、15…通信処理部、16…表現方式記憶部、17…表現方式選択部、18…通信対象識別部、19…制御部。

【図1】



【図2】



【図3】

